GAIA

By Procedural Worlds

QUICK START GUIDE

Gaia is a system that enables rapid and precise creation of gorgeous looking Unity terrains.

Contents

Welcome!

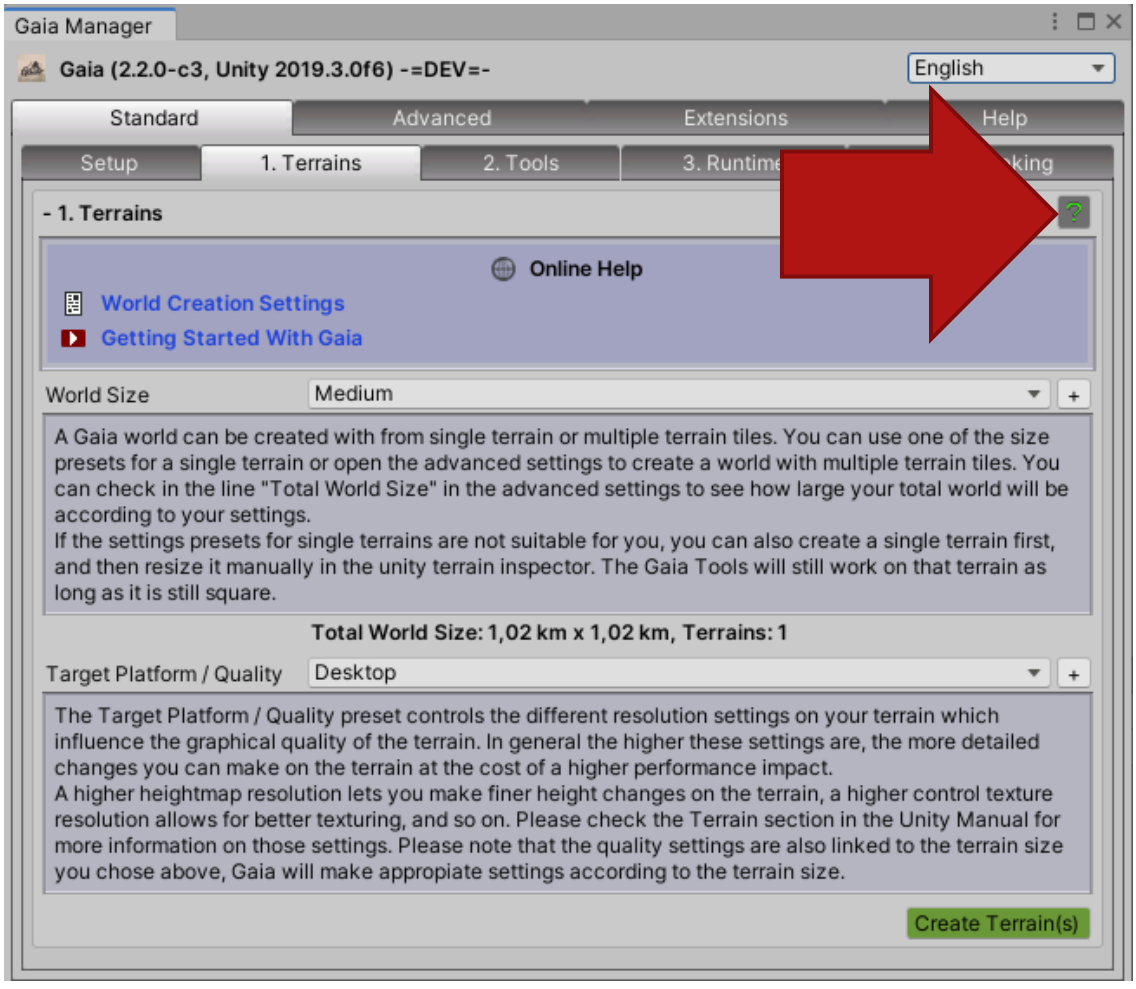
Thank you for purchasing Gaia!

Gaia is a sophisticated tool with a lot of options and while you can go as deep as you like to create fully customized environments, you can also start easily and quickly.

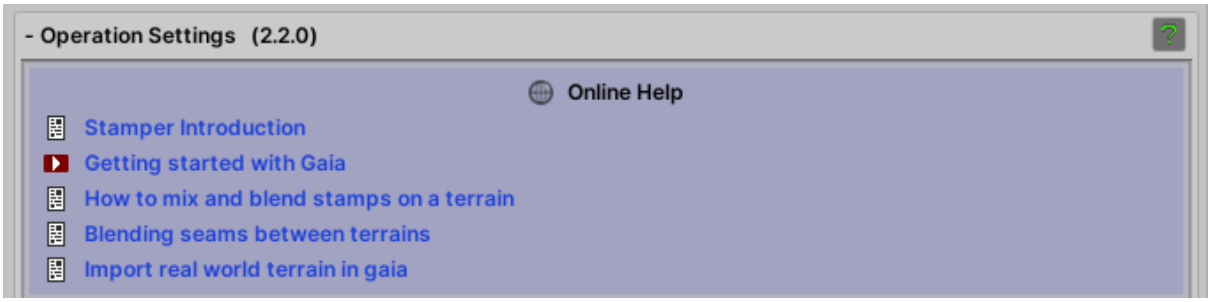
To get up and running as fast as possible, please follow this quick start guide. We also have a range of guide articles and tutorials on our website. You can also find more information in our knowledge base at https://proceduralworlds.freshdesk.com/support/solutions.

Help / Documentation System: This quickstart guide is only a first introduction on how to use Gaia. Most of Gaia's documentation can be found in the help system directly on the User Interface. This saves you opening a manual document or website while working with the application.
Look for a question mark help button in the top right corner: 

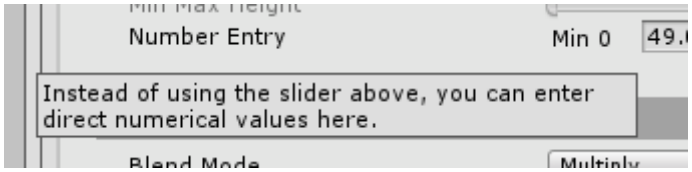
Clicking this button will display additional information on the UI, providing help for the input fields.



If you are not sure what a certain option in Gaia does, the help system would be the first place to check. For more complex tools or workflow information, the system offers links to online help pages in the Procedural Worlds Knowledge Base.



Also note that all input fields use tooltips as well that you can see when hovering the mouse over the name of the input field:



PRO TIP:

Did you know that we also have a range of other products to enhance your environments in Unity? For example, with Gaia you can now use SECTR to stream large multi tile worlds - with massive performance increases!

Check out our other products on the next page to learn more!

About Procedural Worlds

Procedural Worlds empowers artists and developers to bring their vision to life by making it easy to create, connect and stream beautiful worlds.

World Creation & Augmentation:

Gaia GeoSpatial - A system that ingests the real world at scale and generates rich lush environments inside of Unity.
Gaia Pro 2021 - A world generation system for creating, texturing, planting, populating and streaming scenes from low poly mobile, VR and through to high end desktop.
GeNa Pro - A sophisticated level design tool that intuitively creates anything from forests and valleys to rivers and roads and even entire villages.
Fantasy Kingdom Spawner Pack - Unleash the power of the POLYGON Fantasy Kingdom kit from Synty Studios and make stunning Low Poly environments with GeNa or Gaia in just minutes.
Ambient Sounds – An Interactive Soundscapes system for Unity. Ambient Sounds organizes your tracks and effects into Sequences that can be used in a multitude of ways to create dynamic soundscapes for your game.

MMO & Connection:

Connect - MMO with a click! Designed with the same 'simplicity is beauty' ethos of all our products, PW-Connect makes it easy to add multi player capability to any scene.

Acceleration & Streaming:

Storm - Storm accelerates the framerate of any unity scene on average up to 10 times faster than pure Unity and can stream an entire planet (4 billion x 4 billion tiles).
SECTR - A suite of performance-enhancing tools that enable open world streaming, massive mobile games and includes the latest techniques in audio occlusion and propagation.

Utilities:

Pegasus - A cut scene and fly through creator that makes it easy to show off gorgeous environments and drive characters through scenes with localised avoidance and mecanim animation support.

Learn more at our website here: https://www.procedural-worlds.com/

Tutorials, Chat, Ticketed Support

Still stuck even after reading the quickstart guide? You can talk to other members of the community on our discord server: https://discord.gg/TggjQNN

Or you can post on the Gaia Unity Forum thread: https://forum.unity.com/threads/gaia-aaa-terrain-generator-procedural-texturing-planting-and-scene-creation.327342/

Or lodge a Support Request with our customer support: https://proceduralworlds.freshdesk.com/support/home

Migrating from Gaia 1

Gaia 1 and Gaia 2 / Pro are not directly upwards compatible - but it is possible to migrate scenes that were created with Gaia 1 into Gaia 2 / Pro so that you can continue working on your terrain with the more advanced tools. Please visit this page for information on how to migrate from Gaia 1:

https://proceduralworlds.freshdesk.com/support/solutions/articles/33000252032-migrating-a-gaia-1-scene-to-gaia-2-pro

Setup

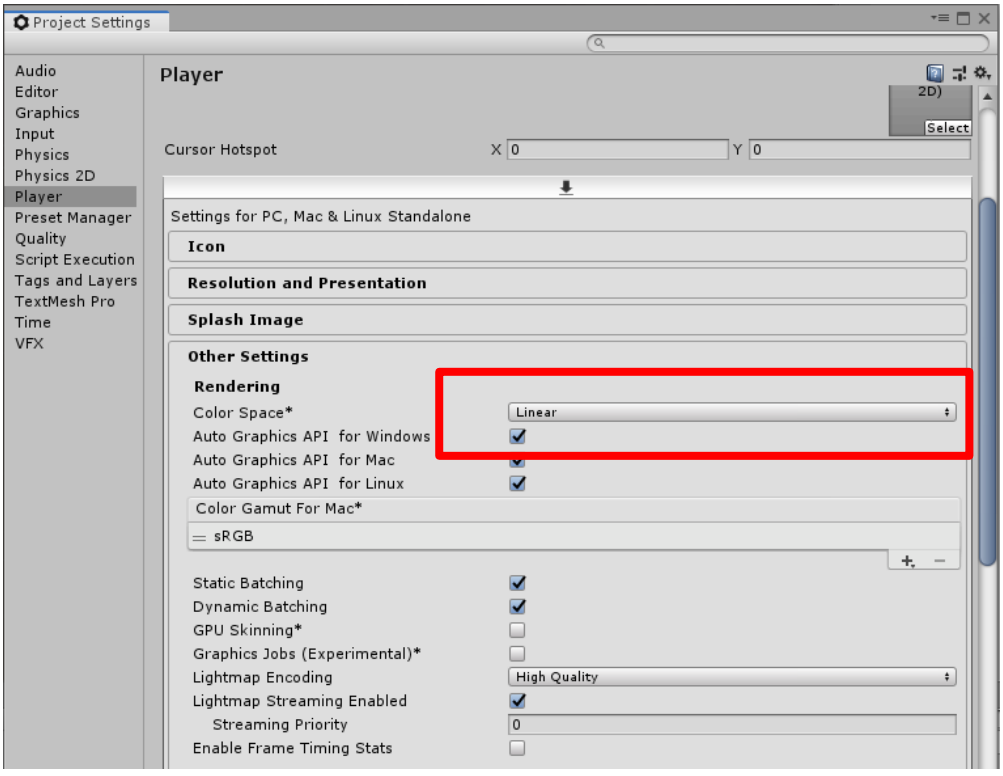
Before you start out with Gaia, please look through these steps to make sure Gaia is correctly installed in your project. While these instructions may seem long, the most text here is more informational, the actual doing is just a few clicks.

1. Create a new project in Unity or open the project that you want to use Gaia in.

2. **<OPTIONAL>** In most cases you want to work in linear colour space, and it can save you a lot of time to switch the colour space to "Linear" in your project before importing Gaia (or any other unity package). By doing so, the included assets will be imported in the correct colour space settings right away (as opposed to being re-imported again when switching the colour space later)

   To find out more about colour space please read the official information from Unity about this topic and decide which colour space you want to use. Unless you are developing for Mobile or VR or have very special requirements, you usually want to choose linear colour space.

   To switch colour space, open
   Edit > Project Settings > Player
   and adjust the colour space under "Other Settings"



   Don't worry if you are unsure about this setting – you can always change the colour space later in your project, but processing this change then

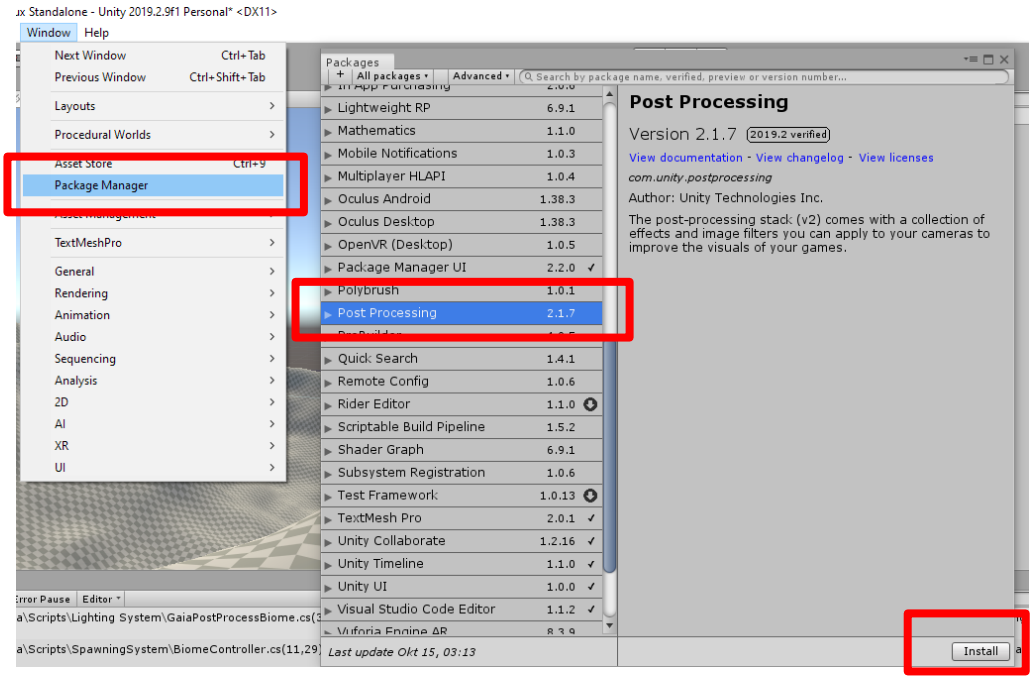
can take a while.

3. Install Gaia from the Asset Store Window or the Package Manager (in Unity versions 2020 and above). If you are not familiar with using the asset store from inside the unity editor, please see these instructions.
Please note that with Unity 2020 and higher the Asset Store Window has been removed, and you need to download asset store content via the package manager now.

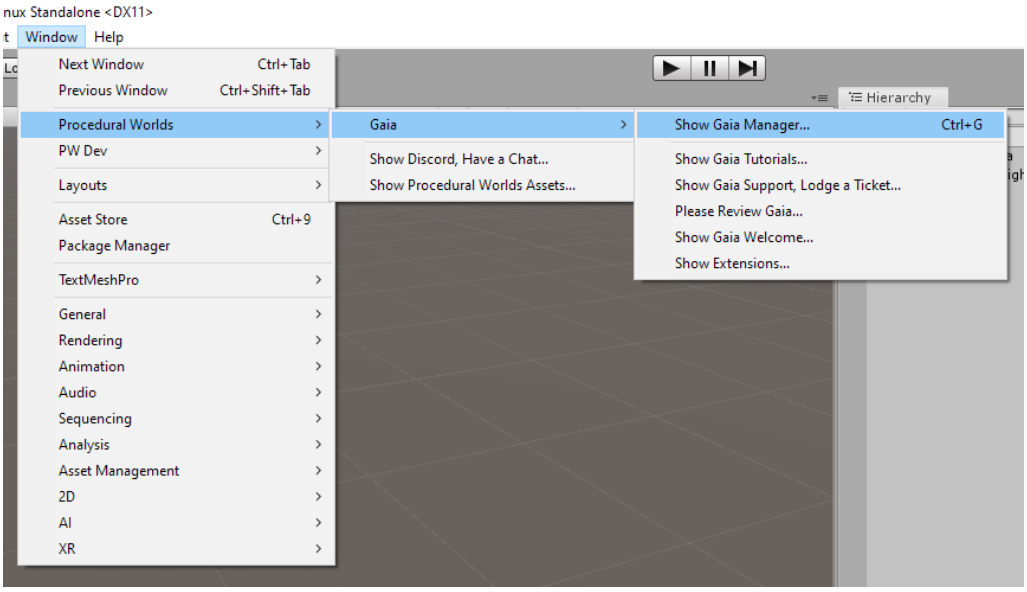
   <OPTIONAL> For a better experience with Gaia in the built-in rendering pipeline it is recommended to install the Post Processing Package from the package manager. This is entirely optional – Gaia will work fine without post processing installed, but then can't set up post processing in your scene, for underwater effects or in your biomes.

   This optional step is also not required when using HDRP or URP as these rendering pipelines come with their own version of post processing automatically.

   To install post processing in your project, please open the package manager from Window > Package Manager and locate and install the post processing package:



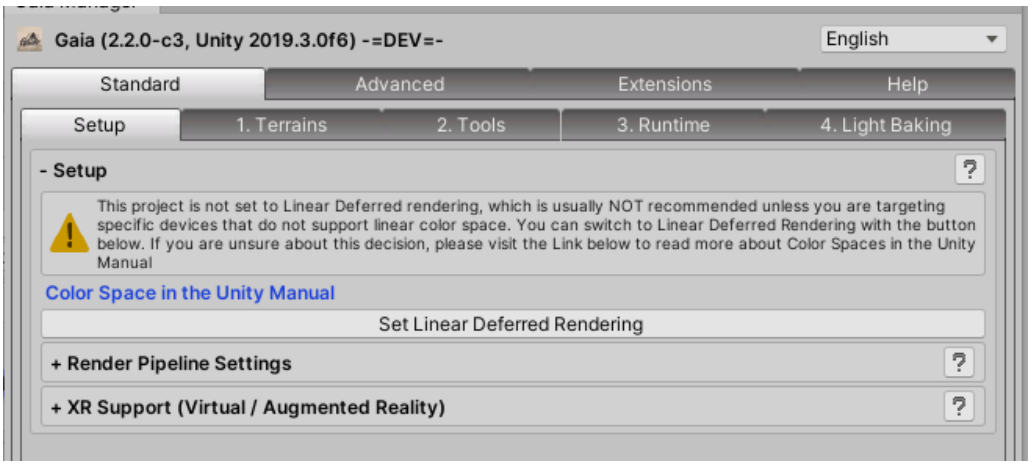
4. Your entry point to using Gaia is the Gaia Manager Window. After importing Gaia from the asset store, you can open the Gaia Manager Window from the Window Menu or by pressing Control + G:



When the Gaia Manager is being opened for the first time after a new installation or an update, it will perform an initial maintenance / setup process which runs by itself.

If the Gaia Manager Menu entry does not appear: In 99% of the cases this is caused by compilation errors in the project. Please check your console for messages that might prevent the successful compilation of your project. In a fresh project this is very unlikely to happen, but in a larger, living project these errors can have many different causes. If you are stuck with a compilation error that you can't resolve, please contact support.

5. In the **Gaia Manager, the Setup Tab will be selected if your project is not in linear colour space or deferred rendering mode.** It will offer buttons to correct this.



Click these buttons to set your project's colour space linear and your rendering path to deferred in order to get the best visuals and performance. This step only ever has to be done once in your project. If

you performed the switch to linear before as mentioned in Step 2 this process will be very fast, otherwise it might take a bit to reimport the assets.

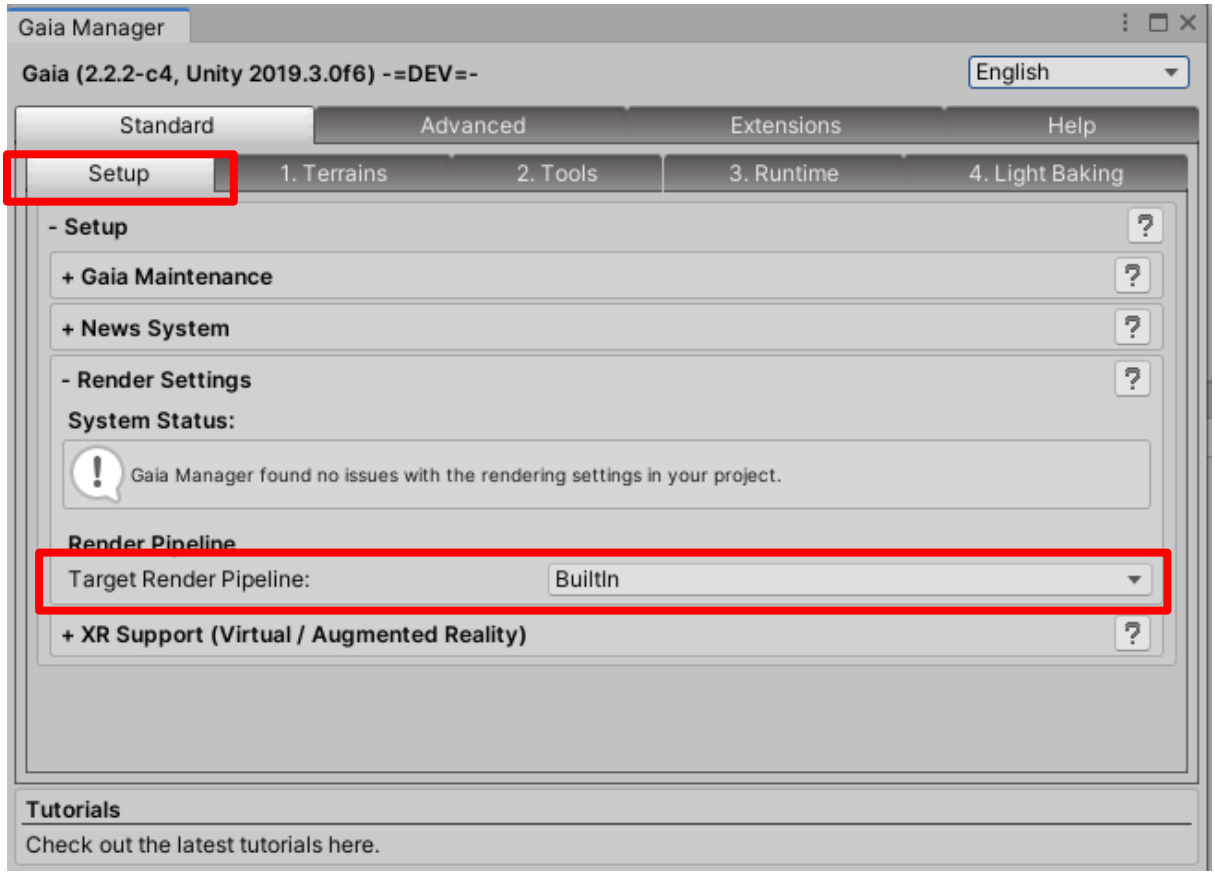
NOTE: If you are using gamma colour space you can ignore this step!

6. **<OPTIONAL>** Gaia comes with its own water and vegetation shaders which also support the Unity scripted rendering pipelines (SRPs). These are commonly known under the terms

   HDRP – High Definition Rendering Pipeline
   LWRP – Lightweight Rendering Pipeline
   URP – Universal Rendering Pipeline

   If you want to use one of these Pipelines, you need to set up Gaia for that specific pipeline. If you want to use Unity's built in rendering, you are done with setting up Gaia already.

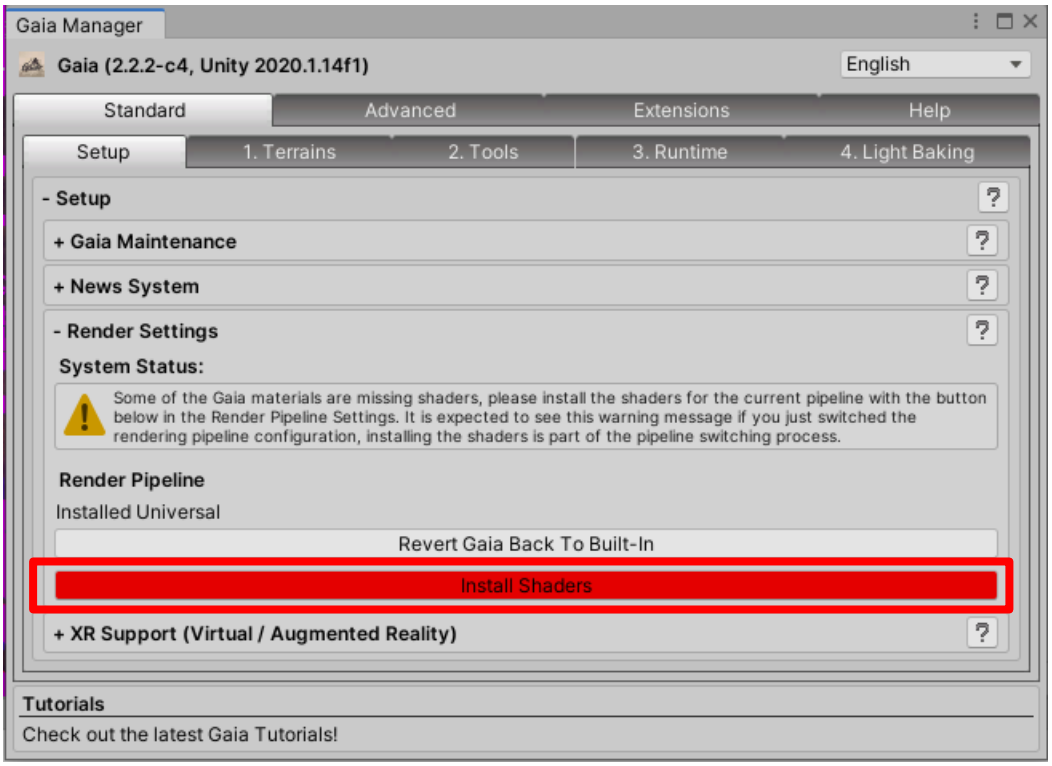
   Supporting these pipelines can be challenging for asset store developers as we need to make sure that features like water use the correct shader for the correct pipeline for the correct unity / SRP version. To make this easier for you, we have mostly automated this process in the Setup Tab in the Gaia Manager:



In this panel you need to do only two things:

A) If you want to use a different pipeline than built-in rendering, select the pipeline you want to use and click the button to upgrade Gaia to this pipeline. This will change the Gaia tools and functions to the respective pipeline. This process can be reverted later as well. **If you want to use built-in rendering only, you don't need to do perform this step, Gaia is pre-configured for built in rendering after import already.**

B) After you configured the rendering pipeline, click the "Install Shaders" button. This will install the shaders for both the water and the vegetation for the correct unity version and the pipeline you selected above. If the correct shaders are already installed, this button will not appear.



The Gaia setup process is now done.

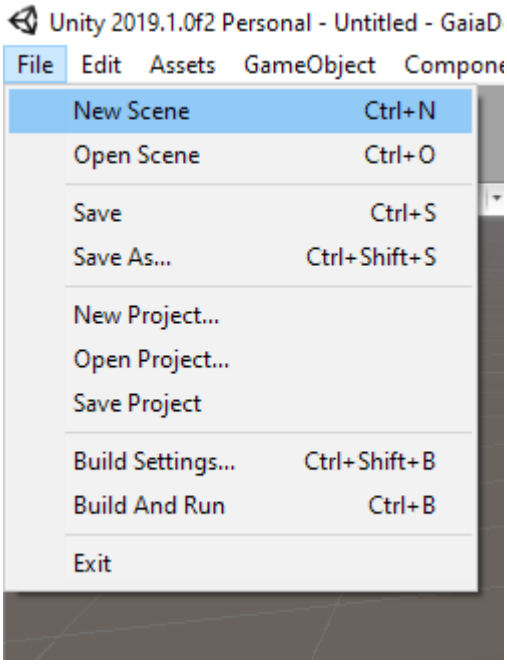
Please note: Using the SRPs is not recommended for Unity beginners as using those pipelines come with their own challenges and limitations you need to master. Doing so while just starting out with Unity will make your journey more difficult than it needs to be.
If you decide to use the SRPs please note that all materials you use beyond the Gaia vegetation items and the water need to be compatible with your target pipeline. Gaia cannot set up materials from other asset packs or convert shaders written for a different pipeline automagically for you.

When you are switching pipelines it is possible to revert back to built-in rendering later and then switch to another pipeline again.

Create your first terrain with Gaia – in just a few clicks!

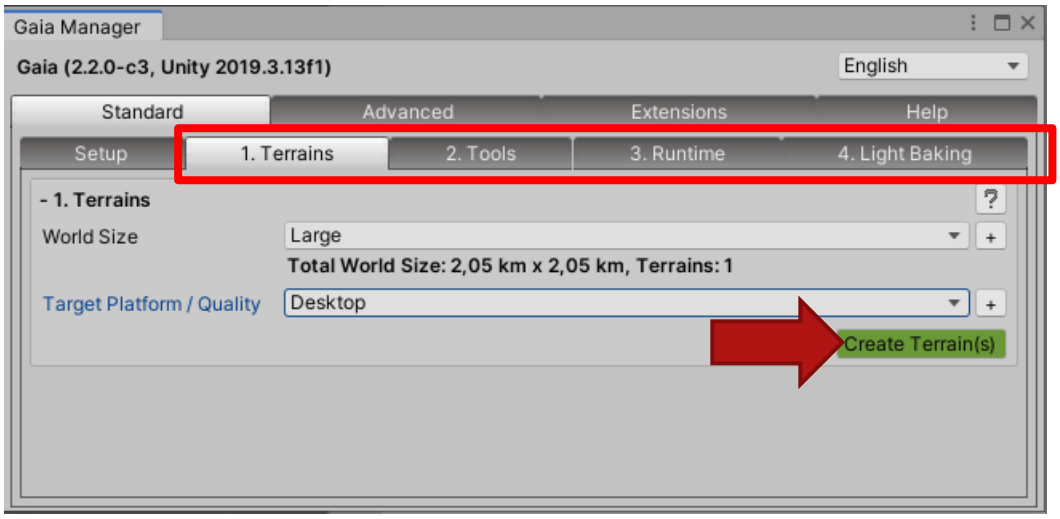
In this scenario we will use Gaia to generate an entire new scene using a simple heightmap stamp and a biome preset – this will create an entire terrain for you in just a few minutes.

1. Create a new scene. To create a new scene, select **File -> New Scene** or **Ctrl + N**.



2. In your new scene, open the **Gaia Manager** by pressing Ctrl + G or the Window / Procedural Worlds / Gaia / Show Gaia Manager... menu entry.

   Creating a scene with Gaia can be divided in 4 steps which are represented as tabs in the Gaia Manager as well:

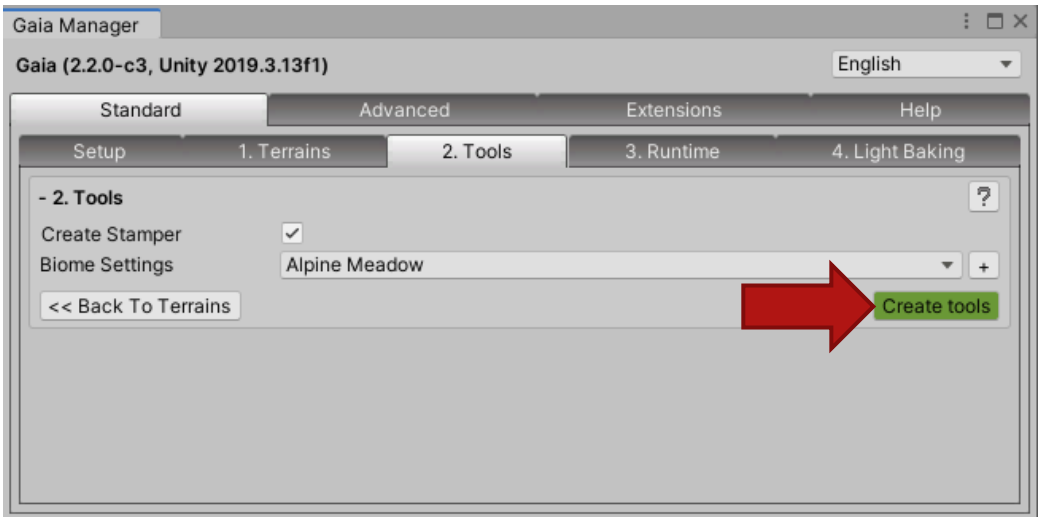


   1. Create Terrains that represent the surface area of your world
   2. Use the Gaia Tools to sculpt the terrains and populate them with textures, trees, etc.
   3. Create Runtime settings such as Lighting, Water, a Player to explore the terrain….
   4. <Optional> Run Light Baking in your scene to bake lighting and reflection probes etc.

   In a new scene, the Terrain tab is selected per default. Here you can set up settings for your world size and the visual world quality.

   For your first attempt the default settings in here should be fine – you can always start this process over to select a different terrain size or quality options later. If you are curious, you can click the small "+" buttons to see the advanced world size or quality options.
   Click on "Create Terrain(s)" to create the terrains and to move to the next tab.

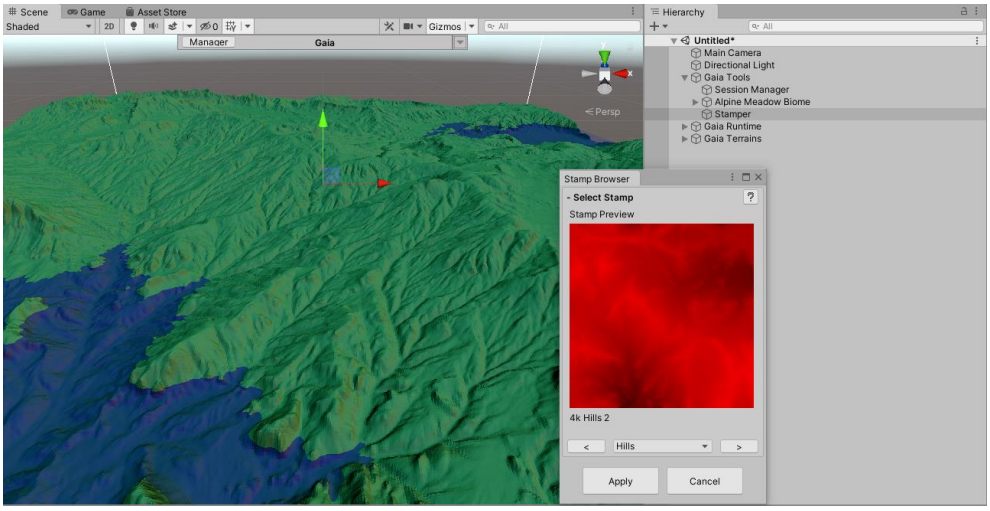
3. You should see a new terrain being added to the scene, and the Gaia Manager will switch forward to the tools tab.



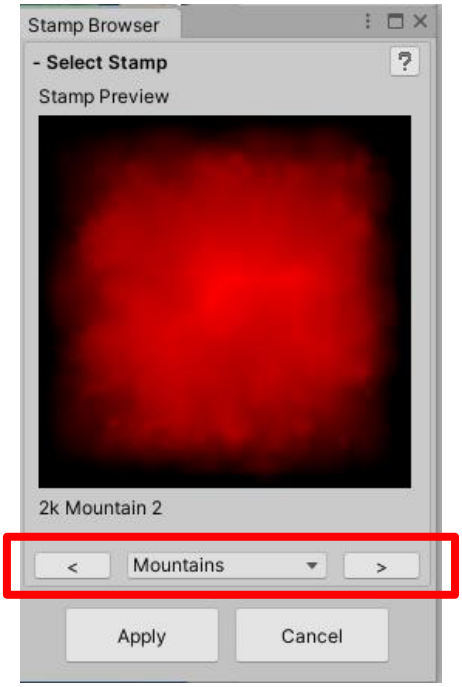
In the tools tab you have the option to add a stamper to the scene – the stamper is the Gaia tool that allows you to sculpt your terrain by raising or lowering parts of it to form mountains, valleys, etc. For the sake of the quickstart guide you would need to leave that enabled.
You can also select a biome settings file to use in your world – A biome is a collection of spawners that populate your terrain with resources such as textures, trees, grass etc. Resources that fit well together can be grouped up in a biome so you can apply the same style of assets to different terrains. It is also possible to spawn biomes only in certain areas of the world which means you can create different looks in different regions of your terrain.

As with the terrain creation tab the default settings are fine for our purpose, so you can click "Create tools" to create a stamper and your first biome in the scene.

Gaia will then create the stamper and the biome, and then select the stamper tool. You can now consider closing down the Gaia Manager, since you will most likely want an unobstructed view of the stamper in your scene.
The blue-greenish terrain you see in the scene view now is not your final terrain just yet – it is more a real-time preview of the terrain shape we are about to create. You should also see a stamp browser window which allows you to quickly select one of the stamps ("terrain shapes") that come with Gaia.

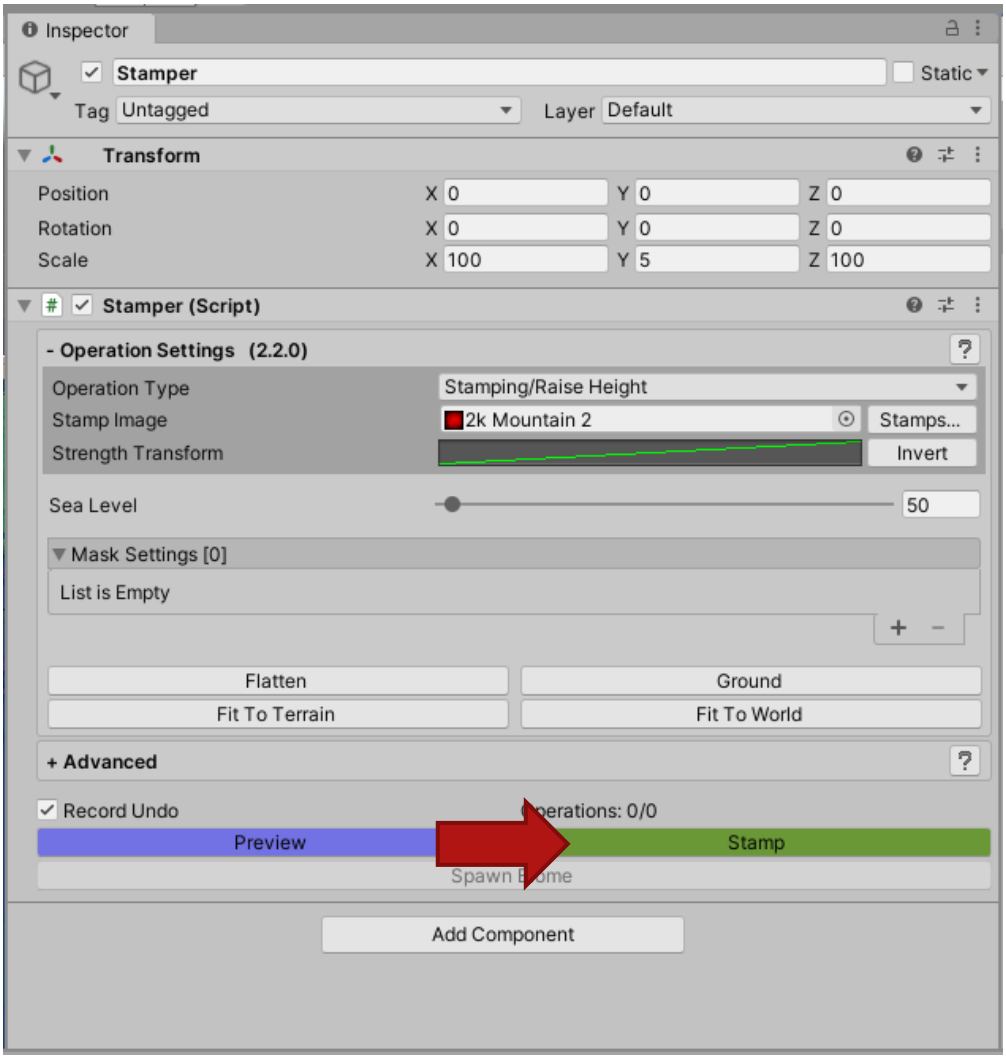


4. To get a first impression on how the stamper and the preview works, try selecting a different stamp in the stamp browser by using the back and forward buttons and / or selecting a different stamp category. The stamper preview in the scene view should update immediately with your selection. Try to find a stamp that appeals to you, ideally it also allows a bit of water in the scene (deep blue in the preview) to be visible as well.

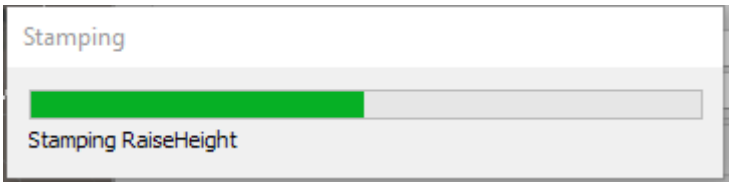


When you are happy with the selected stamp, you can click “Apply”.

5. In the unity inspector you should have the stamper controls selected. Click “Stamp” at the very bottom of the Stamper to apply the selected stamp to the terrain.

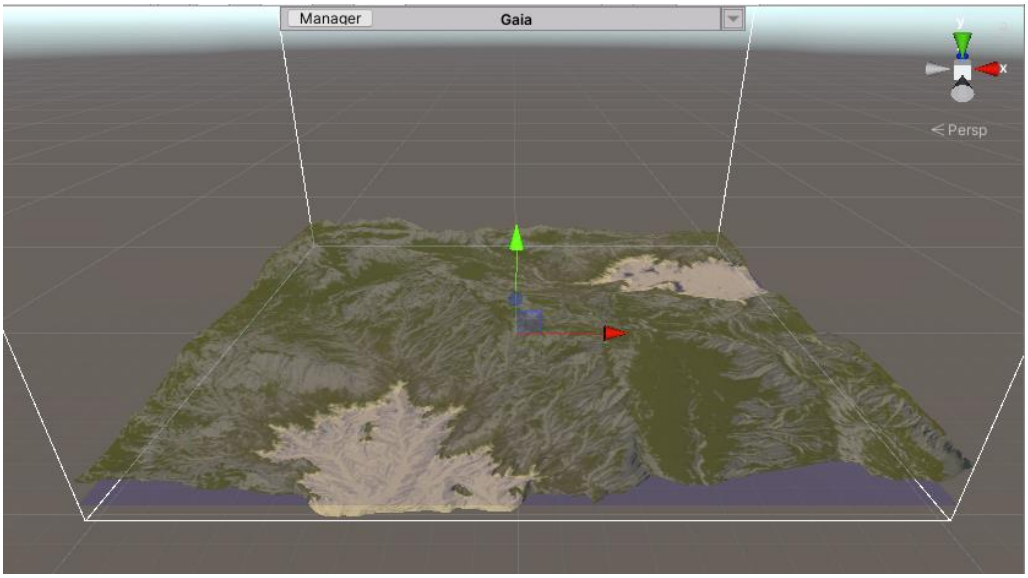


The following is happening now:

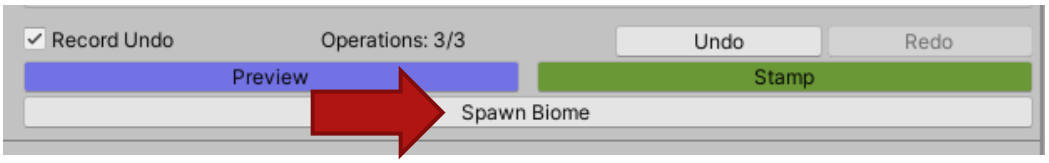


- The stamper adjusts the heightmap on the terrain to form mountains and valleys according to the stamp you selected

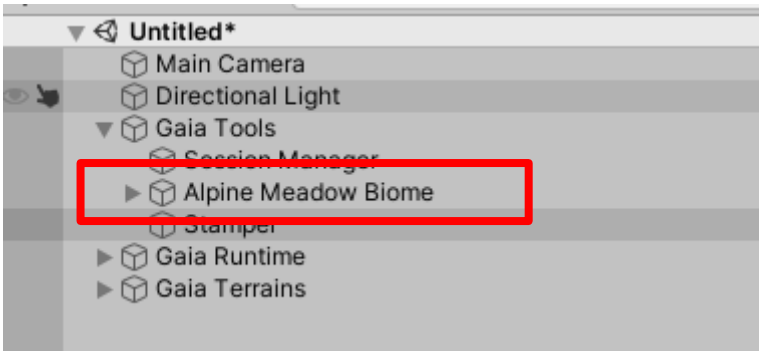
- When stamping is done, per default a texture spawner will apply textures to the terrain so you can estimate better what the outcome of applying this stamp is (having a rock texture on a mountain, grass on plains etc. makes the terrain easier to read).

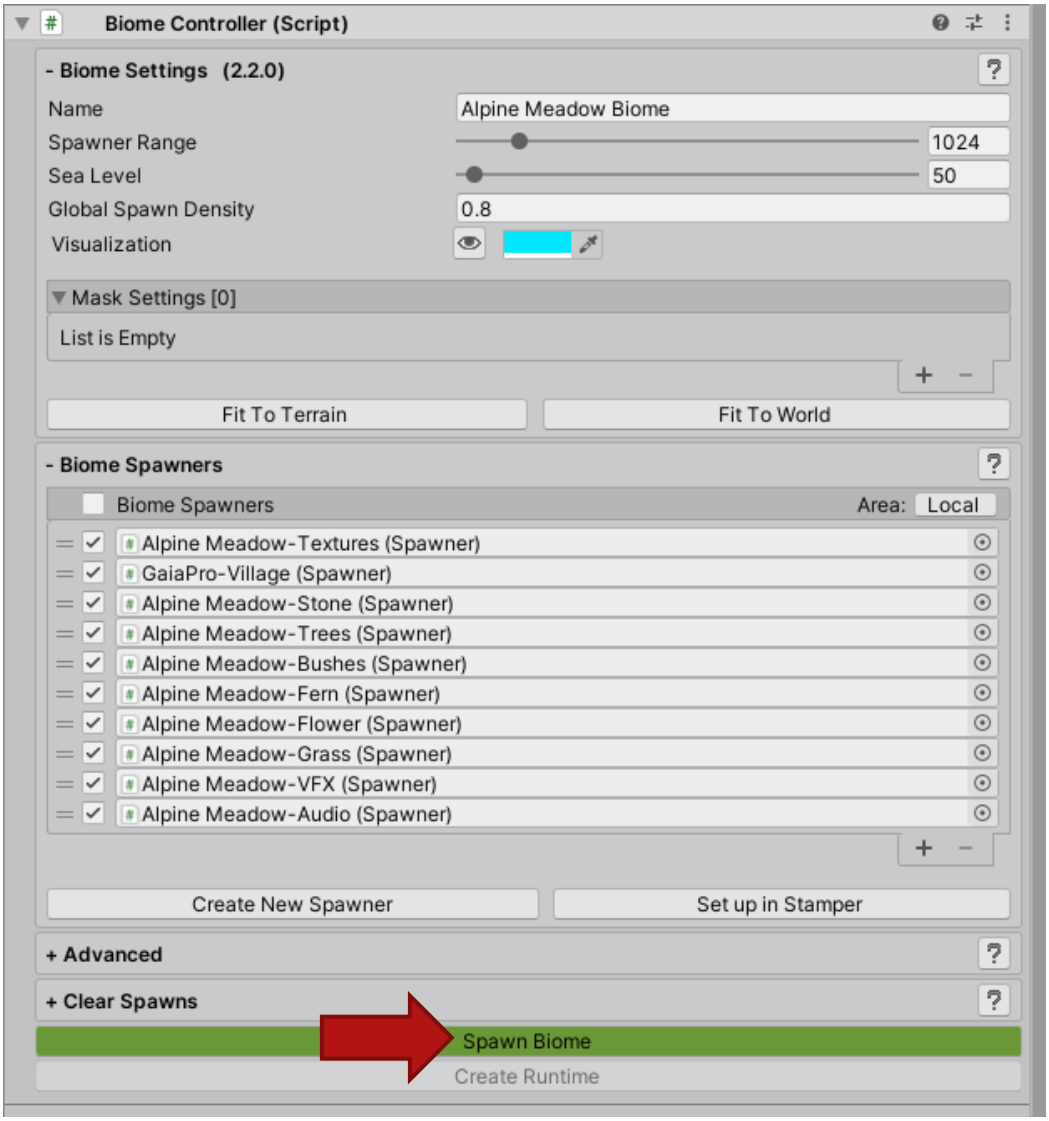


You can repeat this process while moving the stamp around and / or selecting different stamps from the stamp selector window to stamp additional features on the terrain. When you are satisfied with the result, you can look for the "Spawn Biome" button that will place the remaining other assets (grass, tree, game objects) from the biome on the terrain:

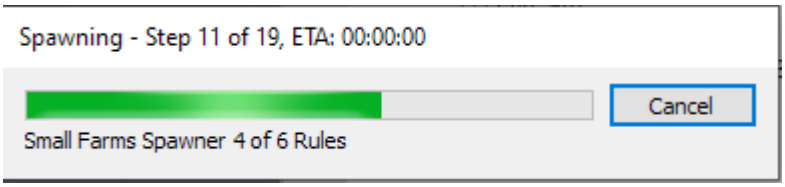


This button is just a shortcut for selecting the biome in the scene hierarchy and running the spawn from there:

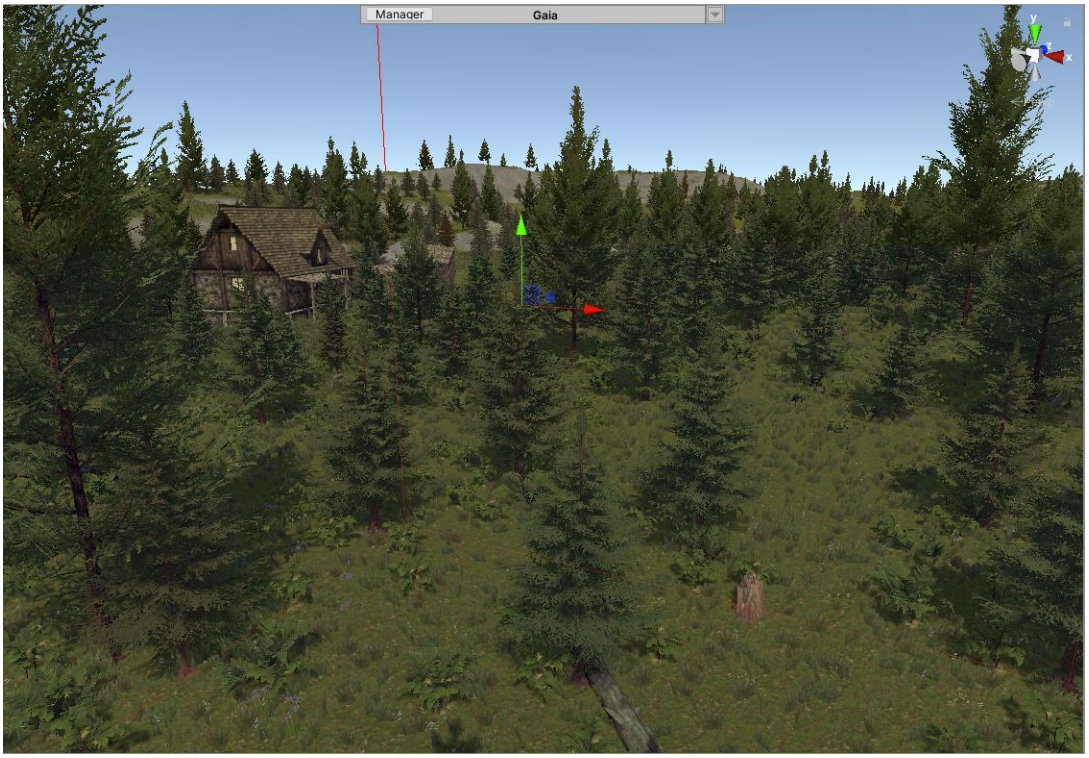




You can either press the "Spawn Biome" button in the stamper or navigate to the biome and start the biome spawn from there.

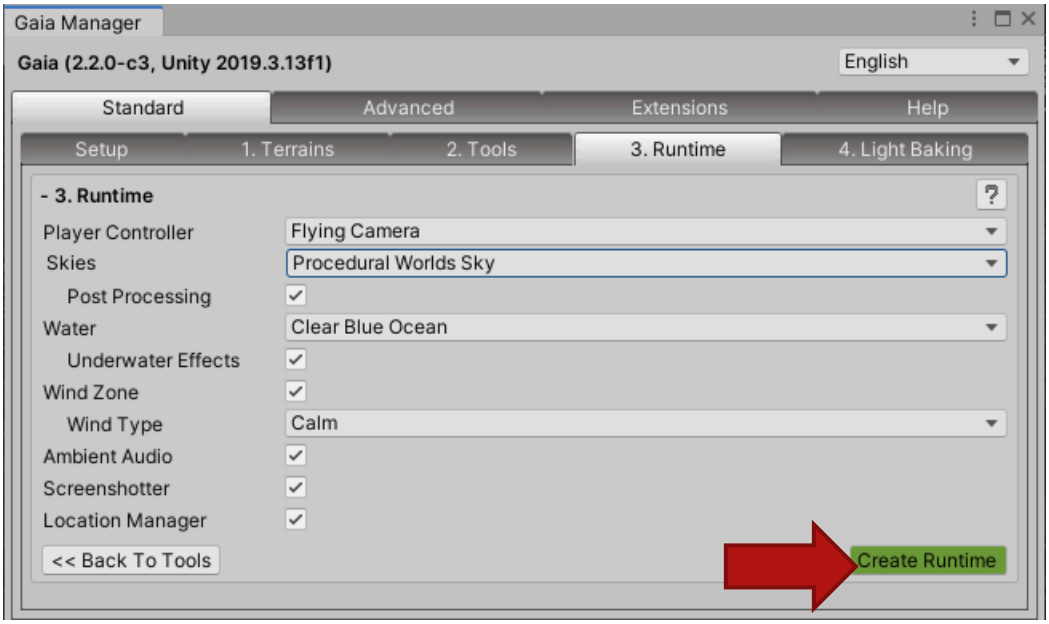


When the progress bar in the centre of the screen disappears and the inspector window becomes active again, the biome spawning process is complete. Zoom in in the scene view a bit and you should be able to see trees and grass on the terrain.



Now that you got your first terrain, let's take the next step to add runtime settings to your scene.

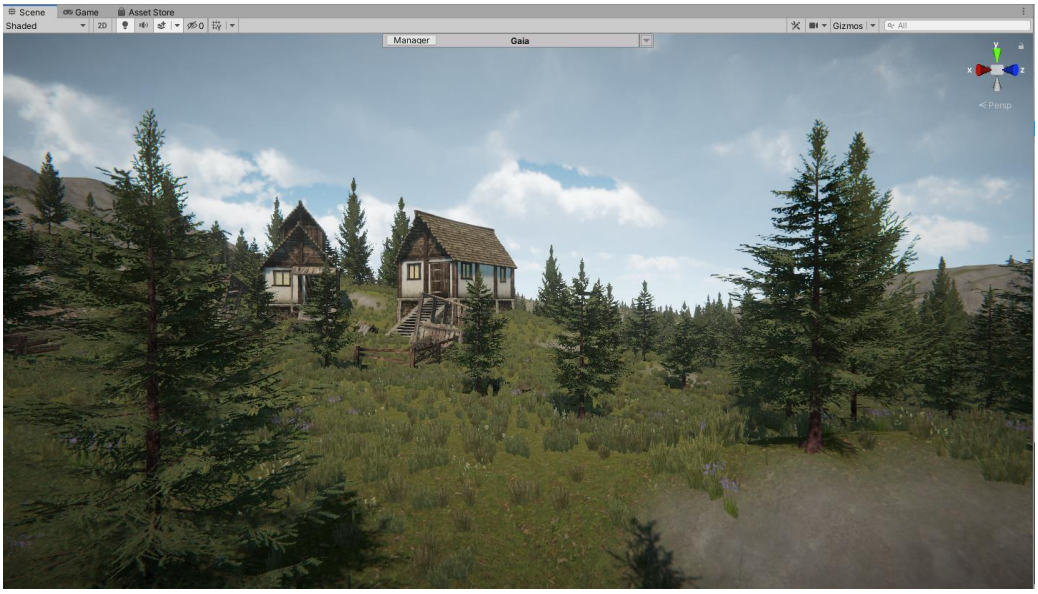
6. Bring up the Gaia Manager Window again. It should automatically select the runtime tab since you already executed the first two steps of the scene creation process.



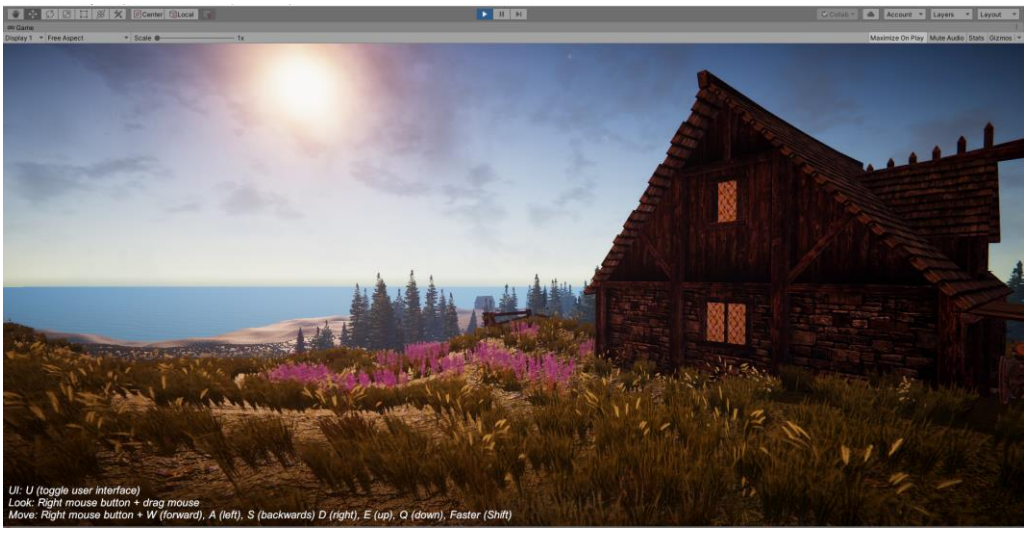
This tab shows you the available runtime elements such as Lighting or

Water that you can add to your scene. Unlike the Gaia Tools, these elements are intended to remain in your final product. You can take a look at the available settings and choose what you want to add to your scene, again the default settings should be fine for the purpose of this guide. Click on "Create Runtime" to add the elements to the scene.

You should notice a huge visual upgrade due to the added sky, lighting and water in your scene, especially if you have post processing enabled.

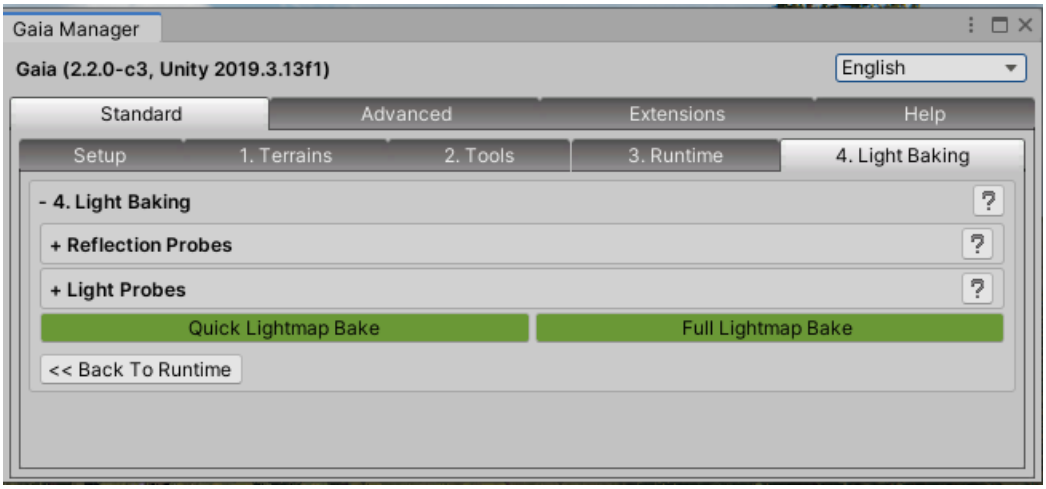


7. At this point your scene is now fully usable and you can click play to see it in action. Depending on the selected player type you can fly / wander through the scene with the usual WASD + mouse controls.



If you selected the screenshotter tool for the runtime setup, you could press F12 to make screenshots which will be saved inside the Gaia User Data folder.

8. The last (and optional) step is light baking. If you are unsure what light baking is and if you want to use it, you can read more about light baking in the Unity manual.
   You can still bake the lighting in your scene just as you would without Gaia, but Gaia offers some additional functionality that makes light baking on a terrain easier.



In the remaining Tab in the Gaia Manager you can find controls for spawning both light and reflection probes across the terrain in a grid pattern – this saves a lot of time in comparison to setting those probes up manually. You can bake those probes by clicking "Full Lightmap Bake" which will trigger the unity light baking process.

If you are not that interested in using light baking it is still recommended to at least click the "Quick Lightmap Bake" button. This button will populate the global reflection and light probe data for the scene which is very quick and allows for basic reflections will give your ambient lighting a more accurate colour tone.

This concludes the Gaia Quickstart Guide.

Please Note: This was only the quickest possible introduction to Gaia and we skipped a lot of the steps that a more experienced user would take in Gaia, e.g. a more detailed terrain sculpting process, and building their own set of spawners according to their design goals.
You are not restricted to using a single stamp and then having to live with the result Gaia generates – You can use multiple stamps to form your terrain and control every aspect of the spawning process to populate the terrain so you can get exactly the result you want.

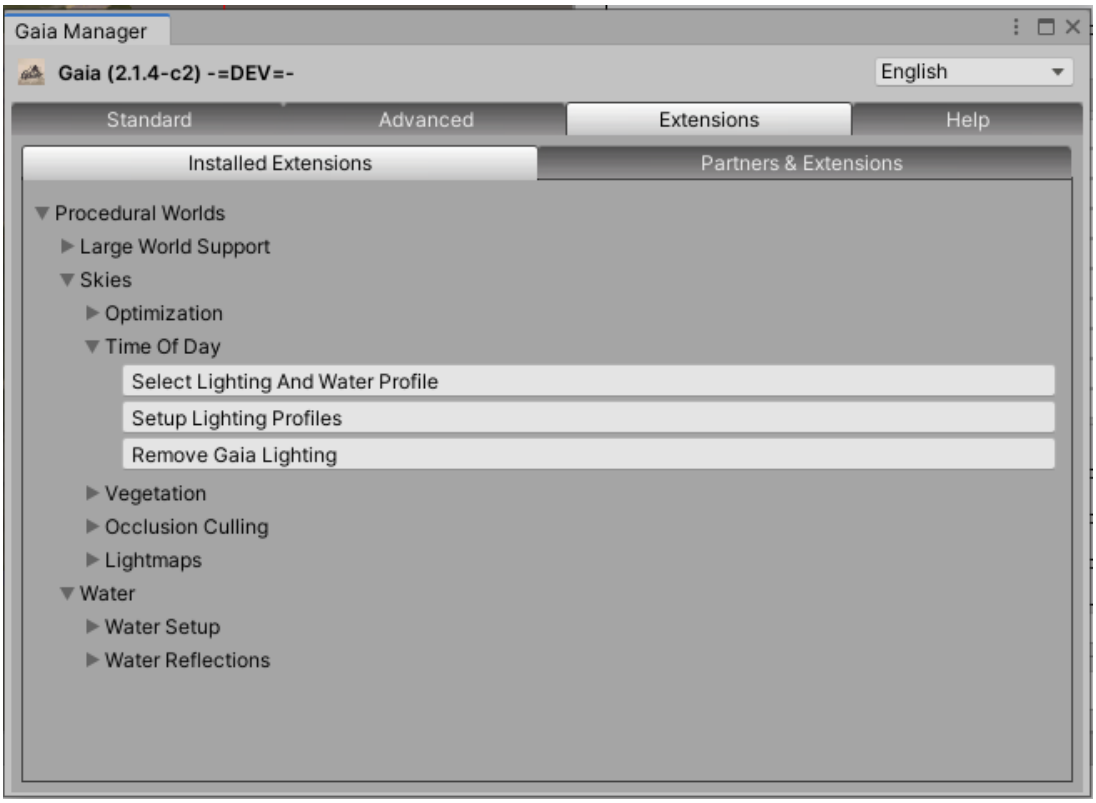
Of course you can also add your own assets to Gaia to spawn them on your terrain in the same fashion as shown in this quickstart guide.

Where to go from here – Next steps

If you have worked your way through the quick start guide, it is recommended to start over but this time around take a deeper look at the individual tools at hand and the features that they provide to flesh out your scene. Remember that the question mark help button provides help directly in the application and links you to more detailed manual articles in our knowledge base where appropriate. If you want to follow more tutorials before experimenting on your own, you can visit the Tutorials Collection on the Procedural Worlds website. The Knowledge Base is also a good starting point when you want to read more about the individual Gaia Tools before continuing your journey.

Gaia GX - (G)aia e(X)tensions

The Gaia extensions system allows Gaia to be extended with other tools and quality assets.



We used the Gaia Extension system to include our own sky and water system so that you can change the sky and water setup and surrounding settings from this menu as well.

To access them, go to the **GX** tab in **Gaia Manager** and select Procedural Worlds,

Skies and Water to modify your time of day, water and post processing settings.

When you select a sky the sun light will be reconfigured, fog colour, density will be changed and the skybox. Also, the post processing profile will be changed to the appropriate time of day to give the best experience.

You can also add and remove the water with also using a few of the preset configurations on the material settings. Lastly you can configure the post processing profiles to change them although these dynamically change when you select your time of day.

Adjusting the ambient audio volume

In the **Hierarchy** under **Gaia Lighting Environment** is the **Ambient Audio** game object. Click on that and then in the **Inspector** adjust the **Volume**.

Why you need to bake your lighting

Lightmaps are very important as they store the information than the Unity GI system needs to light your scene properly.

If you are using a skybox and an ambient light source you will not see any ambient lighting in your scene until your lighting is baked. Distance shadow masking for game objects and terrain won't be correct until you bake your scene lighting. You can have both baked and real time lightmapping in your scene also known as mixed lighting. Most large projects mix both baked and real time lighting. To learn more about light baking and lighting in general, please visit these links:

https://unity3d.com/de/learn/tutorials/topics/graphics/choosing-lighting-technique

https://blogs.unity3d.com/2018/03/09/spotlight-team-best-practices-making-believable-visuals-in-unity/

Pipeline Switching

If you need to switch rendering pipelines before starting a new project or during an existing project, you can do so via the "Setup" panel in the Gaia Manager window. Please see the installation information at the beginning of this guide for more information.